

INTERNATIONAL CITY MANAGERS' ASSOCIATION
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LOCAL DISASTER PREPAREDNESS PLANNING

How well can a city prepare itself for natural disasters and civil defense? What factors enter into plans and preparations to alleviate catastrophes?

Until recent years few cities concerned themselves with the preparation of organized plans to cope with either natural or man-made disasters. Events have demonstrated, however, that both large and small cities can be virtually paralyzed by a variety of natural disasters, including explosion, fire, tornado, earthquake, hurricane, flood, and severe snowfall. Moreover, the public has come to realize that disasters are unpredictable as to when and where they will strike. Hurricanes can strike in other places besides Florida and Texas, as many New England cities know; and floods can occur in cities other than those on the Ohio, Mississippi, and Missouri Rivers, as Chicago residents will verify.

In addition there is always the possibility of enemy air attack. Federal civil defense officials have stated that the radar warning screen, when completed, will provide a maximum warning of from four to six hours only. Recent developments have also disclosed that the new phenomenon of radioactive fall-out accompanying hydrogen bomb explosions increases the danger of modern weapons.

The success that several cities have achieved in averting catastrophes arising out of disasters has highlighted the advantages of advance planning and preparation to coordinate all community resources to deal quickly and effectively with emergency situations. Their experiences supply proof that disaster and civil defense planning must be logically considered as one unit. Although the degree will vary, the same problems of evacuation, demolition, traffic, communications, mobilization, emergency care and feeding, sanitation, fire protection, law enforcement, and restoration of essential services are present in any kind of disastrous occurrence.

The model civil defense act for state legislation, developed in 1950 by the Council of State Governments and the National Security Resources Board, recommended that civil defense organizations be authorized to operate in natural disasters as well as in the event of an enemy attack. By January, 1955, forty-one states had provided this authorization in their original basic legislation.

The Federal Civil Defense Act of 1950 did not give the federal civil defense authority to function in a natural disaster although individual federal agencies generally had the authority to assist states and local governments in the relief of natural disasters. In March, 1951, the President issued an executive order delegating to the Housing and Home Finance Agency the responsibility for coordinating federal relief in natural disasters. In January, 1953, however, an executive order transferred this responsibility to the Federal Civil Defense Administration, and as a result it has been possible for civil defense forces, extending from the federal level to most of the states and cities, to put their skills to work in providing immediate assistance following natural disasters.

Responsibility for the Disaster Plan

Until civil defense planning gained impetus, disaster rehabilitation was largely left to semi- and unofficial agencies. It was felt, however, that an enemy attack would probably result in such severe conditions and in such a scope that the city government should enter the field to marshal and coordinate the resources and facilities of both governmental and private organizations. This feeling was substantiated in Kansas City, Mo., during the destructive flood in 1951. The city administration used all of its resources and coordinated a large number of governmental and private agencies to cope with the disaster.

Disasters do not alter the legal responsibilities of city government but rather multiply the services to be performed and increase the need for performing them promptly and adequately under emergency conditions. In time of disaster the public must be provided with effective leadership and the city government is the logical agency to provide this leadership. No city administration should abdicate its duty so far as to turn over the job of disaster administration to a volunteer organization. Volunteers will be needed, but they must be considered as supplementary to the regular organization, and must be coordinated so that their work contributes to a united effort.

How to Organize. City, county, and school officials likely to become involved in disaster activities should take the lead in formulating the disaster plan. These officials should meet to discuss the hazards, the legal responsibility of local government to the people for protection of life and property, and determine what agencies and facilities within the community could be used to alleviate destruction caused by disasters.

Subsequent meetings should include not only the heads of city and county departments and school officials, but also representatives of nongovernmental agencies including the Red Cross, service clubs, chamber of commerce, veterans groups, public utilities (telephone, telegraph, radio, power and light), transportation (rail, air, electric, motor), medical societies (state and local), affected state agencies, private hospitals, merchants' and manufacturers' associations, press and radio, the weather bureau, and any other group able to contribute assistance in time of emergency. A committee should be appointed to draw up a plan for presentation at a subsequent meeting, and to be presented at a later date to the appropriate legislative bodies for legal action and adoption by ordinance or resolution.

Several fundamentals should be followed in establishing a civil defense and disaster organization: (1) assign responsibility to a director; (2) prepare an organization chart; (3) appoint a capable deputy director or service chief to head each division; (4) select key personnel including technical experts and group leaders; (5) indoctrinate the organization in the broad aspects of the disaster plan; (6) train specialized groups; (7) provide adequate appropriations; (8) enact a municipal civil defense and disaster preparedness ordinance; (9) catalogue all local and state government and private resources and facilities which are available during and after a disaster.

The types of disaster which are likely to strike a community, such as flood, fire, explosion, earthquake, hurricane, and so on, should be determined in so far as it is possible. Factors to be considered are the proximity of rivers, storage dams, reservoirs, watersheds, probable "target areas" in the case of enemy air attack, munition plants, oil fields, refineries, and fire hazards. Building congestion and type of construction, industrial processes, street widths and climatic conditions are also important characteristics in determining the susceptibility of a community to a particular type of disaster.

Organization. The disaster organization must be both flexible and compact. City government possesses the manpower, equipment, supply sources, credit lines, communications, organizational know-how and, to a certain extent, the experience required to deal quickly and effectively with emergency situations. Thus, with some additional specialized equipment, communications, and training, the city organization should be prepared to function immediately and effectively in case of disaster.

The organization of local civil defense and disaster agencies will be different for various cities, depending upon the size of the city and various factors peculiar to the locality. Two things that are essential are (1) that in an emergency one executive authority must be responsible for coordinating the entire operation, including volunteer agencies, and (2) that civil defense or disaster preparedness is enough of a governmental function to require official association of the director with the administrative staff of the municipality. Thus in cities such as Glendale and San Diego, Calif., and Quincy, Mass., the city manager heads up the disaster organization while in Bangor, Me., and University City, Mo., a regular department head specifically designated as civil defense director administers the program "in addition to his other duties," and in Norfolk, Va., the civil defense director is a separate department head with a sizeable volunteer staff.

Assistants or deputy directors, directly responsible to the director, should be appointed to be responsible for the field forces--fighting fires, maintaining law and order, providing liaison with private and other governmental agencies, liaison with volunteer help and with utilities, and manning operation of emergency headquarters and public information. As the disaster itself begins to abate, the director will want to introduce other aides to handle such specialized activities as financing, rehabilitation, redevelopment planning, and welfare.

Situations change quickly under disaster conditions and an emergency organization must be geared to keep pace with swiftly changing situations and to meet any possible contingencies. Accordingly the organization plan should provide alternates for the chief executive, assistants, and division heads in case any of them are absent when disaster strikes or are disabled by the disaster. This will also enable continuous operation with maximum effectiveness for a long period of time if this becomes necessary. In anticipation of a bombing which might totally destroy the personnel designated in the organization plan, it might be well to designate a third set of alternates outside of the normal municipal organization.

The civil defense and disaster organization should be set forth in an ordinance, resolution, or executive order under existing state legislation, and shown on an organization chart in the same detail and manner as other city departments. Such an ordinance has been issued by the National Institute of Municipal Law Officers ("A Model Ordinance Creating and Regulating Municipal Civil Defense Organization and Operation and Model Resolution Establishing Municipal Civil Defense Organization," 726 Jackson Place, N. W., Washington 6, D. C. 1951. 42pp. \$2). This will assure the organization, including both public and private agencies, of an adequate legal base and clearly fix both responsibility and authority of the various segments.

The ordinance or resolution should: (1) define the responsibility of city or county departments involved; (2) clearly define the responsibility of the Red Cross and similar organizations in disaster relief and their relationship to local governmental functions; (3) define the authority and responsibilities of the director; and (4) authorize the establishment and publishing of the disaster plan as a basis for training the organization and informing the public.

The organizational pattern of the disaster plan will vary from city to city. In Eau Claire, Wis., the plan designates five city officials in order, who are authorized

to place the plan in operation: city manager, public works and utilities director, police chief, fire chief and the city-county health administrative officer. The organization is divided into six divisions: administration, communications, fire, health, police and public works. The administration and communications divisions work directly through the city manager and his staff while the other divisions are headed by the director of the corresponding city department.

Among the various activities performed by the divisions in Eau Claire are administration--public information, personnel, supplies and inventory, legal services, mutual aid; communications--radio and T.V., amateur radio, telephone, aircraft, C.A.A. messengers; fire--fire-fighting, plant protection, auxiliary firemen; health--medical aid, hospitals, food, housing, laboratory, Red Cross, morgue; police--traffic, patrol, identification, auxiliary policemen, National Guard; public works--equipment, transportation, railroads, fuel, water and power supply, engineering, demolition and labor.

An ordinance adopted in Glendale, Calif., established a civil defense and disaster council composed of the mayor and councilmen, the city manager, assistant city manager, civil defense director, and 15 division heads. The mayor is chairman of the council with members of the council serving as vice-chairmen. The city manager is chief executive officer of the organization with over-all responsibility for planning programs and operations. The assistant city manager serves as assistant chief executive officer and the full time civil defense director is considered as a staff officer under the city manager.

The 15 service divisions of the Glendale organization are radiological, fire, law enforcement, medical and health, engineering and rescue, communications, transportation, warden, utilities, supply, evacuation, personnel and training, mass care, schools and public affairs and information. The service chiefs are appointed by the city manager with the advice and consent of the city council. The ordinance also provides for a citizen advisory committee to serve as a consultant to the director who makes the appointments with the advice and consent of the city manager.

City Disaster Personnel. City disaster forces divide logically into three categories--on-duty personnel, off-duty personnel, and auxiliaries or reserves. First-line employees in the event of a disaster will ordinarily be those on duty in the police, fire, and public works departments who will start initial defensive preparations by moving into pre-assigned strategic locations and by performing predetermined functions. Off-duty personnel may be mobilized to augment first-line forces or to provide relief.

Enough cities have successful auxiliary or reserve fire and police forces to warrant their consideration by virtually every other city. These organizations meet regularly for training, ride patrol, direct traffic at large public gatherings, or man reserve fire equipment, and they augment regular forces in case of total mobilization. Some reserve units have been organized chiefly to supplement regular city forces in non-emergency assignments. Others, like the auxiliary fire and police forces in University City, have been organized primarily for civil defense but maintain interest and efficiency by assignment to regular programs of police and fire duty. Although in normal times functioning under their own commanders, in times of emergency auxiliary personnel operate under the regular fire and police command organization.

University City, Mo., has trained 140 auxiliary policemen and 90 auxiliary firemen. Manuals outlining the duties and responsibilities of these personnel were drafted to guide them in their work, and training courses utilizing available

personnel in the St. Louis metropolitan area are given 20 to 30 auxiliaries at one time. In time of emergency the auxiliaries are summoned by a telephone chain system in which the police department puts in a call for one or two men who in turn are responsible for alerting the entire organization. An arrangement has also been made with a private telephone service to handle this service if necessary. The private company will continue to place calls until as many auxiliaries are in action as possible.

Local civil defense and disaster organizations can utilize the experience and resources of the American Red Cross to advantage in establishing training programs for volunteer and auxiliary forces. In addition to its other roles in the civil defense program, the American Red Cross has agreed to assist in providing first aid training for civil defense workers and the public, and provide training in the home care of sick and injured and nurse aid activities.

One difficulty in enrolling civil defense volunteers in the past has been the absence, in many states, of workmen's compensation coverage in the case of injury or death while on duty, during either a training exercise or actual emergency. In January, 1955, thirty-three states had legislation on this subject--nine states had compulsory compensation for all civil defense personnel; in six states the political subdivisions may provide compensation at their own expense; in six states coverage is compulsory for some civil defense workers and elective for others; in twelve states compensation is available only for mobile support personnel. Only 15 states have no provisions for compensation.

Semi- and Unofficial Agencies. The American Red Cross, as a national agency chartered by the Congress and as a volunteer organization financed entirely by public subscription, plays an important supporting role in alleviating the effects of disaster. The Red Cross is organized into local chapters and larger regional units, each with internal divisions for medical and nursing aid, food, shelter, and clothing, transportation and communications, and related activities. Effectiveness of organization differs among chapters and areas, but communities where Red Cross facilities and personnel are available and effectively organized should find them an effective force in providing disaster assistance and relief.

Since the Red Cross plays an important role in disaster relief, it should be formally incorporated into the disaster organization and its responsibility should be carefully delineated. In Glendale, Calif., a joint letter of understanding between the American National Red Cross and the civil defense and disaster council provides: "In natural disasters the American Red Cross has specific responsibility for emergency care (food, clothing, shelter, and supplemental medical aid), registration and information, and rehabilitation assistance to affected families and individuals including the financing of such care. It is not responsible for evacuation as such, this being the responsibility of constituted civil authorities, but it may assist with voluntary evacuation if called upon. In war-caused disaster, Red Cross facilities and personnel are available to civil defense organizations for use as arranged between the Red Cross chapters and local authorities. Under such circumstances the Red Cross does not have financial responsibility and will function as a component of the civil defense organization rather than a distinct entity."

Red Cross nursing and first aid personnel may man aid stations and shelters, the driver corps may provide transportation for injured or evacuees, and other personnel can staff shelters and feeding stations. Regular disaster relief for families--temporary maintenance, medical, nursing, and hospital care, repairing or rebuilding of homes, provision of household furnishing and occupational assistance, for which the Red Cross is nationally noted--also go into effect in times of crisis.

The Boy Scouts of America are like the Red Cross, Congressionally chartered, and provide a local, organized boy-power reserve whose members are trained in elementary first aid, communications and other skills. They generally command community respect and, in uniform, can be assigned to assist in the communications center, aid stations, shelters, or soup kitchens.

Other agencies such as the Salvation Army and the YMCA and YWCA have personnel qualified to assist in many of the operations needed to mitigate the consequences of a disaster. Professional medical and nursing personnel will also be essential in most disasters to care for the injured, assist in maintaining public health and sanitation, and meet the other normal needs of the population that continue despite emergency.

Organizations and personnel such as those described above should be briefed and coordinated in advance, with specific arrangements for invoking a "standing operating procedure" in the event of calamity. Representatives of all pertinent agencies--those mentioned plus service clubs and other organizations whose members would be qualified to render some assistance--should be personally known by the civil defense director and he should maintain a list of their names and telephone numbers with specific provision for alerting the chief of each organization in event of need.

In Quincy, Mass., a small booklet has been issued with information relating to the chain of command, each individual's responsibility for carrying out disaster activities, and the names of other agencies and personnel who might be called upon to participate, and methods of contacting them. These lists are supplied to each key personnel so that under any condition which might arise at any time, any one of the key personnel can proceed to notify the disaster organization of the situation requiring activation.

The official charged with disaster or civil defense planning should also be acquainted with heads of official agencies whose resources are likely to be needed in time of emergency. Among these are the state civil defense director, the Federal Civil Defense Regional Administrator, the commandant of the U. S. Corps of Engineers, the closest director of the U. S. Public Health Service, and key county officials. Each of these agencies is especially manned and equipped to handle certain types of problems. The civil defense director, for example, may furnish medical supplies or certain equipment from federal or state stock piles; the Corps of Engineers may aid in demolition work and the Public Health Service may insure safe water supply. If these agencies do not have local offices, a city civil defense director should seek out the nearest office with jurisdiction over his community and establish lines of communication for use in the case of crisis.

Telephone, electric, and gas utilities have crews that will not only restore essential services to working condition but who have special skills that can be commandeered when necessary. The Associated General Contractors of American with branch offices in large cities throughout the country has collaborated with the Civil Defense Administration in developing a tentative program for organization of the construction industry for demolition and clearance service in time of disaster and has suggested that its chapters and branches would receive any plan for mobilization of equipment and personnel in case of emergency with "understanding and co-operation." Association offices are in Washington, D. C., with branches in 45 states.

The Disaster Plan

The myriad of activities encompassed by a disaster plan is shown in the published plans of Corpus Christi, Tex.; Eau Claire, Wis.; Grand Rapids, Mich.;

Manhattan, Kans.; and San Diego, Calif. These plans and other materials on disaster organization are available on loan from Management Information Service. A great variety of publications on civil defense activities and programs can be obtained by writing directly to the Federal Civil Defense Administration in Battle Creek, Mich. Of particular interest are: "Annual Report, 1954"; "United States Civil Defense" (1950); and "Civil Defense Checklist for Cities" (1950). The FCDA on January 1, 1955, issued a comprehensive bibliography which may be obtained by municipal officials on request.

Disaster Headquarters. The central disaster headquarters or control center serves as the focal point for public information and the direction and coordination of the activities carried on by the organization. The location of the central headquarters must be determined in advance so citizens and members of the organization will know the place from where official information will be released.

The location must be easily accessible, compact, and safe from whatever form a disaster may take. If a community is subject to floods, it should be located on high ground; if fire is the greatest hazard, the choice of location should be considered from the standpoint of risk from fire; if earthquake is a possibility, thought should be given to the construction of the building. Another important qualification is the provision for adequate communication facilities with the rest of the city.

Public buildings normally are given first priority as the location for the headquarters. During the 1951 flood in Kansas City, Mo., emergency headquarters were established on the 20th floor of city hall, while in Eau Claire, Wis., headquarters are in the police station with alternate headquarters in a neighborhood fire station in order to make best use of communication systems. Alternate locations should be established in the possibility that damage will make it impossible to use the original headquarters, especially in the case of an enemy bombing attack.

The headquarters must be fully equipped to serve as a control center to coordinate the different activities concerned with disaster relief. A map of the community, large enough to read easily names of streets and highways and on which damaged areas, road blocks, and other pertinent information may be plotted, should be available. This map should be prepared in advance and show installations which constitute hazards, areas subject to danger from fire or floods, and the location of vital facilities such as schools, parks, hospitals, warehouses, service yards, and railroad terminals.

The use of magnetic maps with sprayed plastic protection covers permits the plotting with readily identifiable devices of a magnetic nature, thereby avoiding the need for overlays. With the proper plastic covering, markings may be made with grease pencil and may be easily removed when they have served their purpose. Adequate communication facilities are necessary to handle inquiries and also information from the field. Sufficient clerical staff to carry on the work of the headquarters and representatives of the various services, such as fire, police, Red Cross, health, and others, should be available at the headquarters.

Public Warning and Information. The public is entitled to adequate warning of any forthcoming disaster. In many instances the disaster organization is dependent upon outside sources for warning of most disasters, and in some cases no forewarning will be available due to the nature of the disaster. Steps should be taken, however, to insure the receipt of warning the moment it is available and that the warning is given to the public immediately.

A number of different warning devices will be needed, depending upon the type of community and upon the nature of the disaster. In natural disasters radio and television systems are the first line of a warning system, but these may be supplemented by other means, including sirens, public address systems, and newspapers. In the event of enemy attack, however, radio and TV are relegated to secondary importance since they will probably be knocked out early.

The United States Weather Bureau has normal access to the advance weather information and is willing to notify city officials, press, and radio of unusual weather conditions. Press and radio usually are equipped with teletype or similar equipment upon which will quickly appear warning notices dispatched from other areas. The same is true in part of police and fire departments, particularly if radio, teletype, or other communication equipment is geared to a state or regional police system. The Quincy disaster plan provides that any or all of these groups receiving any form of warning or notice are to contact immediately the disaster control organization.

Cities in Florida and Texas have learned through experience that a great deal of hurricane-caused property damage, loss of life, and injuries can be prevented with proper warning. Through the media of radio the public is told of the seriousness of the situation and is instructed in proper precautions to be taken. Moving boats to safer quarters, boarding up windows, obtaining an adequate supply of water, providing for lights in the case of power failure, and other safety measures taken in advance are things that individuals may do to lessen the ill effects of a hurricane.

The type of siren to be used must be selected in advance to determine whether or not it will be effective. Kansas City, Mo., once used sirens and whistles to sound a practice alert, but when intermingled with the everyday noises of city life it was found that the particular warning signals were completely ineffective. After a warning system has been selected it is necessary to educate the public to it through a series of tests.

To a great degree the success or failure of a disaster plan, once put into action, will hinge on public information--its completeness, its frankness, and its content. Anxiety on the part of the public is a component of disaster and must be met squarely. If this is not done, efforts to deal effectively with the disaster will be greatly hampered by harassing calls from the general public.

During the first 64 hours of the flood emergency in Kansas City, a total of 50 news bulletins were released to the press and radio by the emergency flood headquarters in an effort to keep the public completely informed. Periodic bulletins continued to be released until the emergency abated. Special phones were assigned to press and radio representatives to facilitate the issuing of public information. During the 1954 hurricanes several cities used similar techniques with a great deal of success.

The importance of registering civilians after a disaster has struck should be recognized. The panic which can be generated by the inability of people to learn the whereabouts of friends, relatives, and neighbors, is quite real and unless controlled can seriously interfere with disaster operations. During the 1954 hurricanes in Quincy, Mass., the prompt registration of persons and families affected by the disaster readily permitted officials to answer inquiries concerning persons displaced or missing.

Disaster Personnel Identification. The proper identification of disaster personnel is an activity which should not be overlooked. Adequate identification

documents should be in the hands of all key personnel in such a form as to be readily recognized by all participants in the disaster control operations. With many volunteers participating in different disaster activities, adequate identification is essential to prevent needless and wasteful delay and interference.

During the tornado disaster in Worcester, Mass., lack of proper identification greatly hampered disaster activities. The National Guard and military personnel, assisting in patrolling the devastated areas, refused to recognize any form of identification except that issued by military personnel from a headquarters office quite some distance from the disaster scene. Police ambulances and identified squad cars, containing nurses and rescue workers ordered into the area by the civil authorities on a mutual aid plan, were barred by military personnel, and public works rescue crews, sent into the area the following day, experienced delays up to four hours while waiting for clarification of identification.

Communications. Officials who have been through any type of disaster are agreed that communication between the headquarters command post and all field forces is highly essential. It is necessary for assignment, coordination, reenforcement, and advice to the "home front" from the operations lines. The most common form of public communication, telephone, can be knocked out piecemeal or entirely by a serious disaster. In these cases mobile radio teams such as were used in Quincy, Mass., during the 1954 hurricanes help prevent the serious consequences that may accrue from loss of communication. The Quincy system makes use of all radio-equipped city-owned vehicles, radio-equipped taxicabs, and ham radio stations and operators where feasible. "Hams" and taxicab operators constitute a regular communications team with assignments to sections where communication is considered likely to fail.

Cities such as Kansas City, Mo., Richmond, Va., and San Diego, Calif., have designated alternative sites for command posts in case the main communication centers should be knocked out or isolated. Richmond has a special mobile radio transmitter designed and built to city specifications and containing several radio systems on different frequencies. Cities interested in shared-cost federal aid for certain aspects of communications should consult the Federal Civil Defense Administration in Battle Creek, Mich.

Mobile telephone switchboards can be moved about on substantially the same basis as mobile radio transmitters. The Pasadena, Calif., communications truck carries, besides five radio transmitters and receivers, a multi-position telephone switchboard which can be keyed into the regular telephone system at any convenient location.

Telephone communication must be kept open in order to answer the questions and allay the fears of the public, but particularly to maintain contact among agencies concerned with preparation for an impending and foreseeable disaster and with providing or restoring service after the occurrence. Although much of the telephone network is underground or being placed there, telephone communication is likely to be disrupted by fire, explosion or flood, and provision should be made for short wave radio contact between the major essential agencies. Much of this can be done through existing facilities in city, county, state, and federal offices.

Essential Services. In a serious disaster, electric power, communications, and traffic are not the only services which are interrupted. Loss of electricity puts out lights and furnaces, turns off refrigeration, and renders inoperative many household appliances and other commercial and industrial equipment that may be taken for granted but which are essential in time of emergency. Refrigeration is particularly necessary in connection with medical supplies, restaurant operation, and cold warehousing of meat and other foodstuffs. When household cooking equipment is made

useless or people lose their homes in a disaster, restaurants are particularly pressed to feed large numbers of people. Thus it is necessary that some provision be made to supply them with emergency power and refrigeration facilities.

A city plunged into darkness and individual homes or commercial establishments without communication are somewhat subject to plundering. Vandalism and stealing become major problems. On these occasions provision of a trained auxiliary police force coordinated with the regular force is highly desirable. In Quincy, Mass., foot policemen were stationed throughout the city and kept informed by roving police cars regarding progress of the hurricane and of repairs after it had passed over. They were a positive factor in keeping the public informed and in preventing or discouraging crimes by individuals who would be inclined to take advantage of the crisis.

One of the most useful and essential items of equipment in the event of power failure is a gasoline-operated electric generator. Permanent institutions such as hospitals, which will feel power disruption immediately, should probably be equipped with a standby generator of sufficient size. Other portable generating equipment of varying capacity depending on estimated needs should be made a part of the regular disaster or civil defense stockpile to augment equipment used regularly in municipal service. Such equipment is available on a matching basis through the contribution program of FCDA.

A considerable variety of additional equipment is desirable for coping with the damage wrought by a disaster. Some of this may be in regular departmental service, but additional units or special equipment may need to be stockpiled. Amount and types of equipment must be decided upon locally in terms of current needs, foreseeable requirement, and available finances. A partial list would include medical and first aid supplies, pumps, air compressors, air hammers, chain saws, jacks, heavy tackle, sand bags, bulldozers, tractors, trucks and other automotive equipment.

Advance Preparation. While the nature of specific effects of a disaster may be unpredictable beyond a few hours' warning and past experience with comparable occurrences, much of the procedure to be invoked in the event of crisis can be determined and practiced in advance. Air raid warnings and "dry run" exercises often find the public too thoroughly conditioned or oblivious of the "danger," but public enthusiasm is not necessarily the objective. The real purpose of mock exercises is to train emergency personnel in emergency procedures, to find flaws in any part of the preparedness procedure so they can be corrected, and to achieve some semblance of coordination among the various civil and official agencies that will go into operation in the event of disaster.

University City, Mo., which has both police and fire auxiliaries, conducted such an exercise in the summer of 1954. It was based on a hypothetical fire ranging out of control and sweeping into the city. Auxiliary policemen were assigned to predetermined locations to stop all traffic for the duration of the test. Auxiliary firemen augmented the regular fire companies and engaged in evolutions at the hypothetical fire line. Air raid sirens signaled the start and finish of the drill. All public works vehicles were given some part in the exercise, from transporting police to assigned stations, to backing up fire equipment at the fire scene.

The control center in University City was manned by the director of civil defense with the city manager, city council, and members of the advisory committee on civil defense and disaster relief present to observe. A serious critique following the exercise pointed up the need for additional mobile radio equipment, clarification of dispatching procedures from the communications center, serial numbering of all city vehicles, education of the public regarding right-of-way of emergency vehicles,

and showed up several lesser deficiencies. Weak spots were found in communications and provision was subsequently made to provide an auxiliary standby power unit for the police and fire radio systems.

This example illustrates that even an imaginary but well-planned exercise will show up trouble spots, many of which can be corrected in advance of real need. Raleigh, N.C., had a similar but more realistic experience from a heavy windstorm which preceded by several weeks the devastating hurricanes of 1954. From the windstorm, which caused minor damage and disruption of traffic, the city gained valuable pointers on coordination, communications, demolition, and public relations.

As a result of the hurricane and subsequent evaluation of defense measures, Raleigh officials concluded that three types of emergency situations might be provided for with fixed operating procedures--(1) no fire or serious property damage but blocking of streets and disruption of traffic; (2) great property damage, serious injuries and loss of life in which emergency rescue crews including medical personnel and supplemental staffing of hospitals would be required; (3) sustained power failure affecting water pumpage and food storage in which auxiliary power facilities would have to be provided.

The value of advance preparation is indicated by the hurricane experience in Rockland, Me. All business places were closed before the storm reached extreme proportions and civil defense forces were mobilized to augment the police force, instructing all vehicles to get off the streets and guarding various sections of the city. Within four hours after the storm had passed all roads to and from the city were open. Much of the electric power was restored to service, emergency shelter was provided for those made homeless by wind or flood damage, the Red Cross manning the shelters and also operating a canteen for city and civil defense personnel. Not a single injury was reported despite the debris blown about by the terrific winds.

Mutual Aid. A disaster is no respecter of boundary lines of cities, counties, or even states. In the 1951 Kansas City, Mo., flood, it was found that the majority of the flood victims requiring relief and welfare services were residents and evacuees from Kansas City, Kans. Persons in need received aid regardless of where they lived.

Functional arrangements for mutual aid and coordination of civil defense and disaster plans appear imperative for various governmental units, especially in the event of an enemy air attack. Where there are already existing state, county, or district civil defense or disaster organizations, municipal programs should be closely coordinated with these programs in order to avoid duplication of effort. This coordination could possibly include such services as communications, evacuation techniques and the furnishing of mass housing, feeding, and hospital facilities.

An American Municipal Association study, "Status of Civil Defense in America's Largest Cities: Report of a Survey Covering U.S. Cities above 400,000 Population" (1313 E. 60 Street, Chicago 37. 1954. 23pp. \$1), showed that 10 of 22 reporting cities have functional arrangements for mutual aid and cooperation. Other metropolitan areas have approached the problem as a cooperative arrangement with the county or by establishing a metropolitan area agency. Buffalo, N.Y.; Cincinnati, Ohio; Dallas, Houston and San Antonio, Tex., have city-county disaster agencies while Atlanta, Ga., has a metropolitan area organization. In Cleveland and Cuyahoga County, Ohio, the city civil defense director is designated as the county coordinator under an agreement which permits 58 municipalities to contract with the county for the coordination of civil defense. Each municipality makes a contribution to the county based upon population and assessed valuation.

In California the state approached the problem of cooperation among governmental units by establishing a state-wide mutual aid plan. In March, 1954, this plan had been adopted by 300 of the 312 California cities with civil defense and disaster corps being established by the same. All 58 California counties have similar ordinances. The strength of this mutual aid plan lies in the fact that all cities and counties are bound under law to render immediate material assistance to each other in case of a disaster. Coordination of training and cooperation of the civil defense and disaster corps of the various governmental units are directed by the state in order to provide uniform training and methods of operation.

Publication of the Plan. Each city should publish its disaster plan in a form and in enough detail suitable to its requirements. The plan of one city may be in much greater detail and include different information than that of another city due to size and relative susceptibility to different forms of disaster.

The Corpus Christi, Tex., disaster plan contains a section of general information describing hurricanes, accompanying tidal waves and tornadoes, and outlines precautions which citizens should take to protect life and property. San Diego, Calif., has developed 12 plans to be used in disaster and civil defense, but only one plan, "The Major Disaster and Civil Defense Plan of the City of San Diego," is included in the published plan. This is due to the potential value of the information contained in the other plans to an enemy or criminal. Extracts for publication of these plans can be made only with the knowledge and consent of the city disaster council.

For the information of the civil defense and disaster organization and for dissemination of information to the public, certain basic information should be included in the published plan. This information should encompass the activities of both governmental and non-governmental personnel and agencies.

Included in this basic information are: (1) definitions of the types of disasters which may strike a community; (2) the authority or authorities responsible for placing the plan in operation; (3) an enumeration of the powers and duties of the disaster council, the director, headquarters staff, and all division heads including the chiefs of all non-governmental units included in the disaster organization; (4) a description of the chain of command both in an organization chart and in written form; (5) the location of the central headquarters and locations of alternate central headquarters and division headquarters; (6) definitions of responsibilities of the various units making up the disaster system; (7) a description of the warning system; (8) an inventory and the location of public and private equipment available for use in an emergency; (9) a directory of names and phone numbers of persons responsible for carrying out various disaster activities, including members of the disaster council, the director, assistant director, headquarters staff members, division heads, first and second deputy division heads, and representatives of semi- and unofficial agencies; and (10) a general outline of the procedures to be followed in an emergency.

Financing Disaster Operations

In any disaster of major proportions financial problems become secondary to the many lives at stake and tremendous values of property to be protected. When people are homeless, need food, clothing and medicinal care, and private property is in danger, the tendency is to give little or no thought as to how bills will be paid.

Obligations incurred in the emergency will come due at a later date, however. With the multiplicity of official and semi-official agencies functioning during a

disaster and the availability of federal funds for certain phases of rehabilitation and relief, strict accounting for expenditures and losses is important. Even though expenditures are made on emergency basis, it should not be necessary to by-pass the basic accounting operations of recording expenditures and obtaining approval for them. During the emergency records and approvals may be highly informal, but informality need not preclude written authorizations or evidence of amount spent and their purpose.

Disaster financing was discussed in the entire May, 1952, issue of "Municipal Finance," in several articles on "Disaster Financing by Municipalities."

Reserve Funds. One method to provide funds for disaster rehabilitation and relief is to establish a reserve fund such as Miami and Coral Gables, Fla., have done to meet hurricane clean-up expenses. Miami transferred \$100,000 of budgetary surplus to a reserve fund and replaces any expenditures from the fund with surplus from its current budget.

In Coral Gables the cost of cleaning up the debris after the 1945 hurricane was over \$70,000, prompting the city to establish a reserve fund for hurricane expense by setting aside each year the proceeds of a one mill tax levy. The fund has enabled the city to meet emergencies without affecting revenue available for regular services. Expenditures from the reserve fund are limited to: (1) direct expenditures for debris removal including the purchase of necessary equipment such as power saws, loaders, cranes, and so on, (2) preventive measures such as removal of dead trees in advance of storms and construction of storm water drains, and (3) repairing and replacing trees and shrubs destroyed or damaged by storms.

Federal Aid. State laws, however, may prevent many cities from accumulating reserve funds to defray disaster expenditures. Likewise, they may also be prevented from issuing emergency warrants under state law or city charter. To finance the rehabilitation of municipally owned and operated property, the city then must either cut regular essential services or seek financial assistance from state and federal agencies. In practice both courses of action may be necessary since financial assistance received from other governments may not cover all of the city expenditures for disaster work.

Under provisions of Public Law 875, enacted by the 81st Congress, federal funds can be made available to all communities in stricken areas for disaster relief. Before funds become available, however, the President must declare an emergency in an area, preceded by a similar proclamation by the Governor of the state. The timing of these declarations becomes all important to the city which wants to defray as much of the cost as possible.

The President proclaimed the flooded areas in Missouri and Kansas as an emergency area on July 19, 1951. Kansas City, however, had begun activities of both a preventive and rehabilitation nature as early as July 11 and this was stepped up on July 13 when the force of the flood struck the city. All expenditures made in connection with flood activities prior to July 19, however, were not recoverable from the federal relief fund. Certain of the expenditures for preventive activities would have been precluded in any regard, but an earlier declaration of the emergency perhaps would have defrayed some of the expenditures for activities of a rehabilitation nature.

In addition, disaster funds available to the city did not cover all of the post-July 19 expenditure: (1) certain expenditures involving city forces and city stores were ineligible; (2) certain rehabilitation projects or portions of such projects

were ineligible since the work did not qualify as being an emergency essential to public health and safety or something more than a temporary measure taken to restore services and property; and (3) no provisions existed to allow the city to replace inventory lost in the disaster.

Expenditures of approximately \$1,302,000 were incurred by Kansas City during the flood disaster, of which \$998,000 was recovered from disaster relief funds. The total estimated cost to the city was then approximately \$304,000, seriously depleting an operating surplus built up prior to the flood. In the following budget the city council had to eliminate some desirable expenditures and impose higher rates for general property taxes, gasoline taxes and occupational licenses. As a result of the flood, Manhattan, Kan., found it necessary to revise its budget completely and revise many regular programs to reduce the need for deficiency financing to a minimum.

Auditing Contractors Charges. The city should verify charges of private contractors who are conducting clean-up activities. Kansas City, Mo., successfully used several devices to meet the various problems involved in checking these operations. Checks of payrolls were inaugurated by insisting that each contractor's work crew foremen be supplied with timecards for their men. Roving city inspectors checked with each foreman several times a day to verify the presence of the men, paid on an hourly rate, assigned to the foreman, and absent men and men working less than regular hours were reported. The inspection reports were sent each day to the division of accounts where they were accumulated for checking against the contractor's payrolls. Contractors had to explain any discrepancies or they were eliminated. Foremen were required to sign the report sheet, along with the city inspector, when a check was made.

Equipment, also rented on an hourly basis in Kansas City, was checked by roving city inspectors. Lists of equipment in operation were secured each morning and checked several times each day to see if the equipment was in use. Reports on equipment activity were also checked against the contractor's billing.

Inventory Control and Stores. It is quite possible that municipal equipment will be lost or destroyed in a disaster. Accurate inventory should be maintained for all personal property--vehicles, tools, office machines and supplies. Machine equipment should be numbered serially and these numbers, together with description of each item, its cost and date purchased, should be in the finance office. An inventory of real property also should be kept along lines suggested in MIS Report No. 129, "Management of Municipal Real Property," and MIS Report No. 73, "Inventory Control of Municipal Property."

Proper stores control procedures are particularly necessary in time of emergency. Stock control centers should be established and authorized personnel should be assigned to them. Manhattan, Kans., lost a great deal of property during the 1951 flood due to inadequate stores controls.

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